

REMARKS

Claims 1-5 are in this case. Claims 4-5 have been withdrawn from consideration as directed to a non-elected invention. The examiner has rejected Claims 1-3. The examiner's rejection is respectfully traversed, and reconsideration of the same is requested.

Claim Rejections – 35 USC § 102 Anticipation

Claims 1-3 stand rejected under 35 U.S.C. § 102 as being anticipated by Lima *et al.*

The examiner has rejected claims 1 –3 under 35 USC §102 (b) as being anticipated by Lima. As the examiner is aware, a rejection under §102(b) is improper if even one element of the claim is not found in the prior art. MPEP § 2131. As will be shown by the ensuing discussion, Lima does not teach or suggest at least one limitation present in applicants' claim 1.

Applicants' independent claim 1 has been amended to require the following limitations:

- a. providing a dry sucrose or starch containing feedstock;
- b. hydrolyzing the dry sucrose or starch-containing feedstock under fermentation conditions by a fermentation agent to produce ethanol and whole stillage such that there is a simultaneous hydrolyzing and fermentation of the feedstock;
- c. adding a secondary treatment agent selected from the group consisting of bacteria, enzymes, fungi, or combinations thereof, during the hydrolyzing and fermentation of the feedstock, which secondary treatment agent having the

following characteristics: active under the hydrolyzing and fermentation conditions, not denatured in the presence of the ethanol, does not interfere with the function of the hydrolyzing agent or with the production of ethanol by the fermentation agent, and converts at least some of the constituent comprising the whole stillage to a pre-selected by product.

Thus, claim 1 has been amended to clarify that in applicants' process, the initial feedstock is a dry feedstock which is then subsequently and simultaneously both hydrolyzed and fermented, during which time the secondary treatment agent for the production of the pre-selected product is also added. This amendment clarifies applicants' invention and distinguishes it from Lima. In Lima, as the examiner correctly concedes, the starting material is a pre-liquefied/pre-hydrolyzed feedstock. The fermentation agents and the secondary treatment agents are then subsequently added to this pre-liquefied feedstock. Thus, while applicants' process requires three simultaneously occurring steps i.e. hydrolyzation, fermentation, and production of the pre-selected by product, Lima only discloses two simultaneously occurring steps – i.e. the fermentation and the production of the pre-selected by product. In Lima, the liquidification of the cassavo starch by use of a hydrolyzing agent - alpha amylase enzyme - is conducted in a separate prior step. *See, Lima at page 791.*

The examiner goes on to contend that even if the feedstock in Lima is hydrolyzed prior to the fermentation process, there nonetheless has to be some residual starch remaining in the pre-liquefied feedstock that is simultaneously hydrolyzed during fermentation. However, the examiner's contention has no support in the Lima reference, as Lima clearly and specifically teaches that the hydrolysis/liquidification of the starch is to be done *prior* to, and not simultaneously with, fermentation.

Furthermore, it is known in the art that simultaneous hydrolyzation and fermentation and separate hydrolysis and fermentation are two different and distinct methods for the production of ethanol. In the applicants' process, fermentation is done in conjunction with hydrolysis in a simultaneous saccharification and fermentation (SSF) method. Lima, on the other hand, discloses a separate hydrolysis and fermentation (SHF) method. These two methods are not automatically interchangeable because they involve different steps, chemical reactions, and end products. Depending on what is desired, one method may be preferable over the other. The SSF (Saccharification and Simultaneous Fermentation) method may provide certain advantages in some cases, i.e. this method has been shown to improve enzyme efficiency by reducing the feed-back inhibition from the hydrolysis products, and it has also been shown to improve ethanol yield in certain instances. After careful consideration, applicants deemed this method to be most advantageous for their process. However, the SSF method is not always feasible or desirable in all cases, because a simultaneous hydrolyzing and fermentation could also lead to unwanted chemical interactions in certain situations. In such cases, a separation of the two steps would be more desirable. For example, it is quite probable that in Lima, if the liquid slurry is not formed first, and instead the hydrolyzing, fermenting, and product-production steps are all performed simultaneously, unwanted chemical reactions could occur between the hydrolyzing agent (alpha amylase) and the fermentation agent and/or the secondary treatment agent (CGTase).

In summary, there is no disclosure, teaching, or suggestion in Lima of the combination of steps of applicants' process. Therefore, the examiner's anticipation rejection of claim 1, and claims 2-3, dependent thereupon should be withdrawn

Conclusion

Based upon the foregoing comments and amendments, the application is believed to be in condition for allowance, and an early Notice of Allowability is respectfully requested. If the examiner believes a telephone conference will expedite the disposition of this matter, the examiner is respectfully invited to contact this attorney at the number shown below.

Respectfully submitted:

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William David Kiesel
Reg. No. 28,583
ROY, KIESEL, KEEGAN & DENICOLA
2355 Drusilla Lane
P.O. Box 15928
Baton Rouge, LA 70895
(225) 927-9908